

ment. There is, in fact, strong presumptive evidence that she became his wife nine years previous to his unlooked-for death in 1715. The position, it is true, was never explicitly claimed by or for her; but silence might easily have been imposed by the inferiority of her social position. At any rate, a letter written by Newton to his kinsman, Sir John Newton, May 23, 1715, admits of but one interpretation. It includes the following sentence:—"The concern I am in for the loss of my Lord Halifax, and the circumstances in which I stand related to his family, will not suffer me to go abroad until his funeral is over." No "circumstances" existed which could possibly explain this allusion save one—that of a marriage between the deceased nobleman and the writer's niece. The words are used with no purpose of disclosure; they treat the fact they bear witness to as a known and indisputable one—known, that is, to an inner circle, where Catherine Barton moved all her life with the respect due to an unblemished character. Handsomely provided for by the will of Lord Halifax, she married, in August 1717, John Conduit, M.P., Newton's subordinate, and afterwards his successor at the Mint, and died in 1739, leaving an only daughter, ancestress of the present Earl of Portsmouth.

A considerable amount of elucidatory information regarding the marriage-laws and social usages of the last century adds to the value of the little work edited by Mrs. De Morgan.

*Numerical Examples in Heat.* By R. E. Day, M.A. (London: Longmans, Green, and Co., 1885.)

THIS is not merely a collection of numerical examination questions with the answers attached, but a well-arranged series of problems grouped under twenty-five heads, each beginning with simple questions, which increase in complexity. At the first introduction of every kind of question the answer is worked out in full, with a sufficient explanation to show the meaning of the operations. Other questions are given with their answers, but without the process of solution.

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

#### Note on Sonnet to Pritchard

IN the general theory of algebraical forms there are two modes of defining an Invariant or Reciproquant. In the one mode either of them is regarded as subject to satisfy a partial differential equation—in the other as subject to extinction under the action of a partial-differential operator. Of course the difference between these two modes is one of presentation merely, and not of substance. Nevertheless it was interesting to me to observe that the very same rival concepts of *equality* and *extinction* lie at the root of the admirable investigations simultaneously carried on by Prof. Pickering at Harvard (who works by equation of light), and Prof. Pritchard at Oxford (who works by the method of extinction), which have earned for each of them the distinction of the award of the gold medal of the Royal Astronomical Society. I say the gold medal, because the medal to each is to be regarded in a transcendental sense as only one to both.

This reflection added to the sentiments of regard which I entertain towards my Savilian colleague caused me to write the sonnet in his praise, which you have done me the honour to insert in NATURE (April 1, p. 516), in which, owing to my own inadvertence the words *name* and *praise* have got interchanged. Being desirous that this tribute of unaffected admiration towards the subject of it should be affected with as few blemishes as are compatible with the feeble versificatory powers of its author, I request to be allowed to say that the first and last lines should read—

Pritchard! thy name is lifted to the skies,  
and  
Thy praise shall flourish in immortal song,

respectively. Also that the third and fourth lines should run thus—

To note each ray that gilds the hem of Night  
Or eye her jewelled brow with keen surmise.

At the dinner of the Fellows of the Royal Astronomical Society on the evening of the public presentation of the Medal to Prof. Pritchard, the sonnet was recited by its author at the desire of the Astronomer-Royal, who presided on the occasion.

J. J. SYLVESTER,  
Savilian Professor of Geometry in the University of Oxford; and Author of "The Laws of Verse"

#### Fishery Board of Scotland

YOUR leading article of the 1st instant, headed "A Fishery Board for England," contains several inaccuracies with regard to the Fishery Board of Scotland which it appears desirable to correct.

(1) "If a Fishery Board is useful and valuable, it is a surprising fact that Ireland and Scotland have long enjoyed an institution which is wanting in England."

The present Fishery Board for Scotland was constituted only in 1882. Prior to that date there was a Board of Fisheries which, from its origin in 1808 until 1820, confined its attention to the curing and branding of herrings, and to collecting statistics of the quantities of herrings landed and exported. From 1820 to 1881 statistics of the cod and ling cured were also prepared. This Board of Fisheries having charge of all the fisheries around the coast of Britain, appointed officers at the chief Scottish and English fishing ports, two of whom were stationed in London, from which in the beginning of the century large consignments of herring were sent to the Continent. In course of time the number of herrings cured at the English stations became so small that in 1850 the English Fishery officers were dismissed. In fact, the old Fishery Board existed chiefly in order to collect statistics of cured fish and to superintend the curing and branding of herrings. It will be understood how exclusively attention has been devoted to these objects when it is mentioned that even now the Fishery officers must be practical coopers.

(2) "The Commission for the Investigation of the German Seas is composed of distinguished men who are students and teachers of biology or physics. In Norway and Holland the same thing occurs."

We believe it is a fact that neither the Norwegian nor the Dutch Government has yet instituted Fish Commissions.

(3) "A large number of matters connected with the fisheries have not yet begun to receive attention even in Scotland."

It was only in 1883 that the Scottish Fishery Board obtained from the Government a sum of 300*l.* for studying the life history, &c., of the food-fishes, and the total sum received up to the end of last month was only 280*l.* When it is remembered that a sum of 10,000*l.* has been required to found the laboratory of the Marine Biological Association, it can scarcely be deemed a matter of surprise that many topics of interest and importance have not received from the Scottish Fishery Board that degree of attention which they deserve.

(4) "The spawn of the sprat is still entirely unknown."

Mr. Duncan Matthews, of the University of Edinburgh Zoological Laboratory, in his "Report on the Sprat Fishing during the Winter of 1883-84," published in the Report of the Fishery Board for Scotland for 1883, describes and figures the "spawn" of the sprat.

(5) "The Scottish Fishery Board is about to try an extensive experiment with regard to beam-trawling, prohibiting that method of fishing in certain defined areas. The experiment is worth trying, even at the cost of temporary inconvenience to the fishery industry. But in order to render such an experiment fruitful, it would be necessary to make a detailed and exact investigation of the areas selected. It is doubtful whether the organisation of the scientific department of the Scottish Board is yet in a position to make this investigation in a sufficiently complete manner."

Seeing that he appears to speak as one having authority, and not as the scribes, it is gratifying to note that the writer of your article deems "the experiment worth trying." We have only

to regret that he appears to view with suspicion the competency of the scientific department of the Fishery Board to try it. Perhaps it may serve to reassure him on this point to learn that these suspicions are not in any way shared by the Government, who have now furnished the means for purchasing a steam-vessel for trawling; for maintaining three laboratories (one of them with a large number of tanks); and for securing the assistance of three skilled naturalists who will work in conjunction with Profs. Ewart and McIntosh, to whom your contributor alludes.

S. F. B.

### Protective Influence of Black Colour from Light and Heat

THE difficulty of explaining the black colour of races near the Equator has long been felt. Strong sunshine undoubtedly tends to darken the skin; but if black, as generally supposed, is the colour that absorbs most heat, natural selection should have developed white as the complexion best adapted to shield mankind from the intense radiation of an equatorial sun.

Without venturing to offer an opinion on the subject, I should like to mention three cases that have come under my personal observation, in which brown-skinned natives, in very different parts of the world, blacken their faces to protect them from intense light and heat.

In Morocco, and all along the north of Africa, the inhabitants blacken themselves round the eyes to avert ophthalmia from the glare of hot sand.

In Fiji the natives, who are in the habit of painting their faces with red and white stripes as an ornament, invariably blacken them when they go out fishing on the reef in the full glare of the sun.

Lastly, here in the Sikkim hills the natives blacken themselves round the eyes with charcoal to palliate the glare of a tropical sun on newly fallen snow.

This I had an opportunity of experimenting on. We were caught in a snowstorm at an elevation of 10,000 feet; when it subsided all the coolies blackened their eyes, so I had one eye blackened, the other left natural, and went out into the sun for half an hour. I cannot say that I felt much difference. Next day I tried marching for about six hours, up to 12,000 feet, with both eyes blackened. I cannot say how far this may have been palliative, but the glare was so bad, we were all very glad when the mist came up and obscured the sun. Radiation is far more intense at high altitudes than at low levels. Still it is impossible to suppose that three such different nations would have adopted the same device to mitigate sun glare if black colour did not give some palliation at least.

Here then we have one of those strange anomalies in which physiological experience contradicts the teachings of pure physics. Charcoal black, which is used in physical experiments as the best absorbent of every kind of heat radiation, is practically used by three races at least, to protect one of the most sensitive human organs from reflected light and heat. Of course I cannot offer any explanation, but bring the facts to the notice of those who have the skill and opportunity to make physiological experiments, in the hope that they may perhaps find a clue to the long-sought-for explanation of the colours of the human race.

RALPH ABERCROMBY

Darjeeling, March 15

### Pumice on the Cornish Coast

ABOUT a month ago I picked up on Maenporth Beach, near Falmouth, a piece of drift pumice of the size of a large goose's egg. It was rounded, floated heavily, and was just twice the weight of a piece of Krakatō pumice of the same size which had been obtained in the Indian Ocean several months after the eruption. No Cirripedes, Serpulæ, &c., had attached themselves to it; but in one of its crevices I found a tiny dead coleopterous insect, which I unfortunately lost. From my familiarity with floating pumice in the Western Pacific I at once perceived that this fragment had been a considerable time in the water. After searching the other beaches in the neighbourhood I failed to find another piece. Mr. John Murray, to whom I sent the specimen, informs me that he has similarly picked up fragments of pumice on the west coast of Scotland.

Without speculating on the source of the fragment found on the Cornish beach, I should remark that, judging from an experiment made in the Western Pacific, pumice may float for several years on the sea before it becomes sufficiently sodden to sink to

the bottom. I kept floating in sea-water for two years and nine months three pieces of pumice which I originally obtained in the tow-net whilst cruising in the Solomon Islands. Although they had evidently been a long time in the water before I got them, since they floated heavily and had in two cases the tubes of Serpulæ attached, the only apparent alteration in their buoyancy produced by my experiment was that one which floated in fresh water when I first obtained it now sank. How much longer they would have continued to float in the sea-water I cannot say. From their condition before the experiment they must have been previously floating for even a longer period.

H. B. GUPPY

95, Albert Street, Regent's Park, April 10

### The Connection between Solar and Magnetic Phenomena

IN the discussion which followed the reading of Prof. Balfour Stewart's paper on magnetic declination, at the Physical Society, considerable weight was attached to Carrington's observation of a solar outburst observed on September 1, 1859, and the simultaneous occurrence of a movement of the magnetic needles at the Kew Observatory.

Nearly twenty-seven years have now elapsed since the event referred to took place, and both the sun's surface and the magnets have been under observation thousands of hours since that time.

Hundreds of magnetic movements similar to that above mentioned have been recorded since, and I should deem it a great favour if any correspondent would either inform me of the time or time of similar outbreaks to that seen by Carrington, if such have been observed, or refer me to any published accounts of the phenomena.

Carrington's paper is published in the *Monthly Notices* of the R.A.S. vol. xx. p. 13.

G. M. WHIPPLE

Kew Observatory, April 12

### Aurora

A BRIGHT Polar light was observed here on March 30 from 8 to 11 o'clock p.m., how long it had lasted I cannot tell. At 8 o'clock only flashes of a pale blue were seen about the Pleiades; their brightness was changing very quickly; at 11 o'clock across the whole northern sky there lay the well-known dark segment with the bright arch above; from the latter only a few reddish beams of light were seen emerging.

Königsberg i. Preussen

H. FRITSCH

### Was it an Earthquake?

YESTERDAY morning (Thursday, April 8), at 5.35, the door of my room vibrated regularly for about three or four seconds. I did not perceive any motion of the room itself. I was up at the time, and quite still. Perhaps the best way of finding out whether anyone else experienced anything of the same nature, so as to determine whether it was in any way connected with an earthquake, is to write to NATURE.

Ladbroke Gardens, W., April 9

A. TREVOR CRISPIN

### "Radical" or "Radicle"

MR. MADAN in his amusing letter last week (p. 533) raises a point which has doubtless often caused the comments of teachers. I think "a partical of reasoning" at least *can* be adduced in favour of "radical." In this paradoxical world it is not surprising to find that "radical" is the "conservative" and "constitutional" spelling, and that "radicle" is a radical alteration in a centenarian word. For next year will be the hundredth anniversary of what was, if I am not mistaken, the first use of the word by Guyton de Morveau. It seems to have long retained its French spelling, and I think it would be a pity to alter one which thus recalls to the memory a host of great names, and perhaps more than any other single word in chemistry suggests the international brotherhood of scientific men. Of course Mr. Madan's protest has force from the grammatical point of view; it may also be urged that "radicle" is English for the French "radical." But from the chemical standpoint surely the "radical" is as much a "stem" as a "root"? For instance toluene is either  $C_6H_5(CH_3)$ , or  $CH_3(C_6H_5)$ , and it would be arbitrary to select from a very limited number of reactions the "root" in prussic acid,  $H.CN$ ,  $C.NH$ , or